ISEL
INSTITUTO SUPERIOR DE ENGENHARIA DE LISBOA

ISEL ADEM
Área Departamental de Engenharia Mecânica

Sheet course ()

Course	MSc IN MECHANICAL ENGINEERING		
Unit	Aircraft Maintenance	Mandatory	☐
		Optional	☒
Unit scientific area	Industrial and Maintenance Engineering	Category	B

Unit category: B - Basic; C - Core Engineering; E - Specialization; P - Complementary.

Year: 1st	Semester: 2nd		ECTS: 5,0			
Contact time	Total:	T:	TP: 45,0	PL:	S:	OT:

T - Lectures; TP - Theory and practice; PL - Lab Work; S - Seminar; OT - Tutorial Guidance.

Unit Director	Title	Position
Pedro Miguel Rodrigues da Costa	Master of Science	Invited Assistant Professor

Learning Objectives (knowledge, skills and competences to be developed by students)

(max. 1000 characters)

To enable the student of Mechanical Engineering (MSc) with the general knowledge about the peculiarities of Aircraft Maintenance namely concepts and forms, plus the methods of Reliability Centered Maintenance applied to the aircraft and its systems its failure condition criticality analysis and consequent definition of appropriate Maintenance Program. The existing methodologies to development and maintain a Aircraft Maintenance Program and about the Airworthiness Regulatory documentation and consistent quality police. Characterize different types of Aircraft Maintenance Organization (MRO) and understand its economic framework organization associated with an Airline. Skills:The knowledge acquired, the MSc Mechanical Engineer can be easily integrated at independent Aircraft Maintenance and Engineering Organization or being part of an Airline holding some advantage in its recognition by the applicable National Aviation Authority. He may als outside the scope of Aeronautical Engineering.

Syllabus

(max. 1000 characters)

1. Aircraft Maintenance Purpose

Aircraft Structure, Systems, Engine, Components.

2. Maintenance Strategies

Requirements for potential failure modes prevention; Reliability centered maintenance; Potential and functional Failure; MSG-3 methodology.

3. Maintenance Programs

Requirements and development of an Aircraft Maintenance Program; Airframe (on aircraft - hangar); Engine (on workshop); Components (on workshop).

4. Aircraft Maintenance Organization

Aircraft Maintenance Documentation; Aircraft Engineering; Materials Management; Maintenance on hangar; Maintenance on engine shop; Maintenance on components shops; Quality System and Safety Management.

5. Aviation Authority and Regulatory Documentation

Aviation Authority (INAC, JAA, EASA, FAA); Airworthiness regulatory requirements; MOE- Maintenance Organization Exposition; Certifications.

Two workshops on Aircraft Maintenance, led by invited experts, in class, will be normally carried out.

Demonstration of consistency of the syllabus with the objectives of the course

(max. 1000 characters)

The general knowledge about the peculiarities of Aircraft Maintenance, namely, concepts and forms, are included in chapter 1. The methods of Reliability Centered Maintenance applied to the aircraft and its systems, its failure condition and criticality analysis and consequent definition of appropriate Maintenance Programs, plus the existing methodologies to development and maintain an Aircraft Maintenance Program are included in chapter 2 and 3. Airworthiness Regulatory documentation and consistent quality police plus the characterization of different types of Aircraft Maintenance Organization (MRO) and understand its economic framework associated with an Airline are included in chapter 4 and 5.

With this methodology students will gain the knowledge and the competences required.

Generally, program contents will such as 1, 2, 3,4 and 5, 6 and 7 to compete more effectively for targets 1, 2, 3, 4, 5 receptively thus allowing the students gain the knowledge and skills listed.

Teaching methodology (evaluation included)

(max. 1000 characters)

Teaching methodology: - Theory and practical lectures (some case studies) with exposition supported on the board (approx. 30%) and by IT (power point, approx. 70%).

Assessment: Exam and a practical Work (done during the semester and presented and discussed in the

presence of the other students in the last class).

The Exam has a "weight" of 80% on the final classification on the unit , with 20% being the "weight" of the practical Work. The minimum passing grade in the unit is 10 points minimum (in 20 max.).

Demonstration of consistency of teaching methods with the learning objectives of the course

(max. 3000 characters)

The exercises related to the chapter 2,3, are only possible after having understood and acquired skills arising from subject taught in the 1st chapte. The Pratical Work on Aircraft Maintenance can only be developed, after having already acquired skills resulting the subjects taught in chapters 4 and 5.

Main Bibliography

(max. 1000 characters)

Costa, P.M.R., Apontamentos da Disciplina

KINNISON, H.A., "Aviation Maintenance Management", McGraw-Hill, 2013

MOUBRAY, J., "Reliability Centered Maintenance", Butterworth Heinemann Ed., 1997

Documentação vária dos Fabricantes ("Original Equipment Manufacturers" – OEM; MRBR, PPH, MPD, AMM) e das Autoridades Aeronáuticas (Part M, Part 145)